Pengyu Chen

Department of Geography
University of South Carolina

Email: pengyuc@email.sc.edu
Website: https://pengyu-gis.github.io
GitHub: https://github.com/Pengyu-gis

RESEARCH INTERESTS

Applying deep learning and spatial statistics to analyze human and environmental spatial behavior; leveraging AI in remote sensing for environmental monitoring; integrating computer vision and multimodal data analysis for urban sensing and planning.

EDUCATION

University of South Carolina	Columbia, SC	Geography	M.S., 2024–2026
Wuhan University of Technology	Wuhan, China	Geographic Information Science	B.S., 2020–2024
Wuhan University	Wuhan, China	Visiting Student	2023–2024

PUBLICATIONS

Journal Articles

[J1] **Pengyu Chen**, Sicheng Wang, Chengyang Wang, Senrong Wang, Beiao Huang, Lu Huang, Zhe Zang. A GAN-Enhanced Deep Learning Framework for Rooftop Detection from Historical Aerial Imagery. *International Journal of Remote Sensing* (Cover Article), 2025. [Link]

[J2] Yanbing Chen, Jonathan Nelson, Bing Zhou, Ryan Zhenqi Zhou, Shan Ye, Haokun Liu, Zhining Gu, Armita Kar, Hoeyun Kwon, **Pengyu Chen**, Maoran Sun, Yuhao Kang. Where are GIScience Faculty Hired from? Analyzing Faculty Mobility and Research Themes Through Hiring Networks. *Cartography and Geographic Information Science*, 2025. [Link]

[J3] **Pengyu Chen**, Teng Fei, John A. Kupfer, Yunyan Du, Jiawei Yi, Yi Li. Intelligent Bear Prevention System Based on Computer Vision—An Approach to Reduce Human-Bear Conflicts in the Tibetan Plateau Area, China. *Ursus* (Accepted), 2025. [Link]

[J4] Xinyue Gu, **Pengyu Chen**, Chao Fan. Socio-demographic inequalities in the impacts of extreme temperatures on population mobility. *Journal of Transport Geography*, 2023. [Link]

Preprints

[P5] **Pengyu Chen**, Fangzheng Lyu, Sicheng Wang, Cuizhen Wang. ZS-TreeSeg: A Zero-Shot Framework for Tree Crown Instance Segmentation. *arXiv preprint*, 2025. [Link]

[P6] **Pengyu Chen**, Xiao Huang, Teng Fei, Sicheng Wang. Cross-Modal Urban Sensing: Evaluating Sound-Vision Alignment Across Street-Level and Aerial Imagery. *arXiv preprint*, 2025. [Link]

Conference Papers

[C7] Ruixiang Cheng, Xinyu Wang, **Pengyu Chen**, Jiaxin Liu. Multi-Agent Path Optimization Based on STA* Algorithm. *ACM Conference Proceedings*, 2022. [Link]

[C8] **Pengyu Chen**, Tengyuan Liang, Zibin Wu. Impacts of Ethiopia Dam on Vegetation and Water and Ecological Countermeasures. *IOP Conference Series: Earth and Environmental Science*, 2022. [Link]

RESEARCH EXPERIENCE

University of South Carolina   Columbia, SC
Research Assistant   Summer 2025

- Funded by City of Columbia to train canopy segmentation model on 4 years of NAIP remote sensing imagery
- Analysis of canopy loss/gain across neighborhoods in Columbia
- Supervisors: Dr. Cuizhen Wang, Dr. Kirstin Dow

Wuhan University   Wuhan, China
Visiting Student & Research Assistant   2023–2024
- Trained YOLO-based object detection algorithm and deployed model compression to K210 microcontroller
- Application: Detecting Tibetan brown bears and using K210 to drive water pumps and bear spray
- Supervisor: Dr. Teng Fei

Harvard University Spatial Data Lab   Remote
Research Intern   2024
- Spatial Data Laboratory (SDL) Internship Program
- Geographic Big Data Analytics, Spatio-Temporal Data Mining
- Supervisor: Dr. Yuhang Pan, Peking University

Clemson University   Remote
Research Intern   2022–2023
- Data processing, data cleaning, and curve generation using MATLAB and Python
- Published paper in the Journal of Transport Geography
- Supervisor: Dr. Chao Fan

ONGOING PROJECTS

- Spatial Model of Crash Fatalities by Examining Effects of Infrastructural Factors. Co-first author. Accepted by Transportation Research Board (TRB) Conference | Oral Presentation, 2025.
- Deep Learning in the Urban Forest: High-Resolution Canopy Change Detection in Columbia, SC (2005–2023). First author, 2025.

TEACHING EXPERIENCE

Graduate Lab Instructor, Landform Geography (GEOG 201)   University of South Carolina   2024–2026

PROFESSIONAL EXPERIENCE

Xuzhou Construction Machinery Group (XCMG)   Xuzhou, China
Algorithm Intern   2022
- Developed digital roads using Leica software and presented results with ArcGIS
- Implemented curve fitting algorithms to support digital road modeling applications
- Supervisor: Mr. Bowen Wu

LEADERSHIP EXPERIENCE

GISinfo (Subprojects under GISphere)   Development Team Leader, Council Member   2022–Present
- Develop backend using Django framework with Django REST Framework APIs and MySQL database; frontend using Vue and Mapbox
- Manage user demand pool, leading backend and frontend development
- Website: https://gisphere.info/

SCHOLARSHIPS & AWARDS

2024–Present	Graduate Instructor Assistant Scholarship, University of South Carolina
2025	AAG Graduate Student Travel Grant
2022	Huazhong Cup Mathematical Modeling Competition, Second Prize
2022	MathorCup Mathematical Modeling Competition, Third Prize
2021	Huazhong Cup Mathematical Modeling Competition, Third Prize

TECHNICAL SKILLS

Programming	Python, C#
Software	MySQL, ArcGIS, QGIS, MATLAB
Languages	English (TOEFL iBT 102), Chinese (Native)

SERVICE

Peer Review	*Computational Urban Science*
Volunteer	Board Member of GISphere